#5/A
7/30/02

Please amend the subject application as follows:

In the Claims:

Please cancel claims 1-19 without prejudice to pursue these claims in a related application to be filed in the future.

REMARKS

Claims 1-37 were pending. Applicant has cancelled claims 1-19 directed to compositions. Accordingly, claims 20-37, directed to methods, are presently pending.

In view of the remarks herein, Applicants respectfully request that the Examiner reconsider and withdraw the outstanding objections and rejections to the claims and the Specification.

Applicants are pleased that the Examiner has taken the position that compositions and methods of claims 1-37 have industrial applicability. Applicants respectfully traverse the Examiner's position that claims 1-37 are not novel and lack an inventive step.

SUMMARY OF INVENTION

The present invention relates to novel methods and compositions for detecting and characterizing biomolecules using sensitizer-linked substrate molecules.

NOVELTY REJECTIONS

Claims 1-37

In the Written Opinion, claims 1-37 were found to lack novelty under PCT Article 33(2), as allegedly anticipated by Wilker et al (*Angew. Chem. Int. Ed.*, 1999, 38, 90-92) for reasons of record.

Applicants respectfully disagree. The subject matter of the present invention is novel.

Wilker et al (Angew. Chem. Int. Ed., 1999, 38, 90-92)

The Examiner describes Wilker et al (*Angew. Chem. Int. Ed.*, 1999, 38, 90-92) as disclosing substrates for rapid delivery of electrons and holes to buried active sites in proteins. The Examiner states that Wilker et al. "discloses a photochemical method for this purpose by tethering a Ru photosensitizer to a protein substrate, which reduces the P450 heme very rapidly. By linking sensitizers to substrates, the reactive redox states in enzyme interiors can be studied more closely... The use of sensitizer-linked substrates allows the preparation of new oxidized and reduced states of P450."

Applicants' respectfully traverse this rejection for lack of novelty. Lack of novelty "requires that the cited reference or references teach "each and every aspect of the claimed invention."

Applicants have cancelled claims 1-19 in order to expedite prosecution of the present application. Applicants retain the right to pursue claims similar to claims as filed, in further pending applications. The methods of claims 20-37 are novel since the prior art (Wilker *et al.*) does not teach methods of the use of sensitizer-linked substrates in detecting target biomolecules as presently claimed.

The methods taught by Wilker et al are directed to the use of sensitizer-linked substrates to explore reactive redox states in enzyme interiors. At no point does Wilker et al (*Angew. Chem. Int. Ed.*, 1999, 38, 90-92) describe or suggest the methods of claims 20-37. The methods of claims 20-37 are directed to novel methods for detecting and characterizing target biomolecules using the sensitizer-linked substrate molecules, and are thus not identical to the methods described by Wilker et al.

As described in the Specification (page 22, lines 22-26), the characterization of biomolecules includes, but is not limited to, measurement of structural properties of the biomolecule such as the active site size, shape, and volume, aspects of substrate specificity, elucidation of the mechanism of action of the biomolecule, and interactions between biomolecules, i.e. regulation or modulation of the biomolecule, especially by other biomolecules, and not limited to the exploration of reactive redox states, as taught by Wilker *et al.* Thus, the methods of claims 20-37 do not overlap the disclosure of Wilker *et al.* and the citation does not teach each and every aspect of the claimed invention. Thus, this reference cannot render the invention of claims 20-37 lacking in novelty.

Moreover, Wilker *et al.* does not describe or suggest the method of claim 37, which is directed to an assay to identify agents that modulate a target biomolecule activity using sensitizer-linked substrates. Thus, the method of claim 37 does not overlap the disclosure of Wilker *et al.* and the citation does not teach each and every aspect of the claimed invention. Thus, this reference cannot render the invention of claim 37 lacking in novelty.

In view of these differences, Wilker et al. does not support a rejection of the claimed invention for lack of novelty.

As such, the references cited do not deprive the subject matter of the claims of the present application of novelty, under Article 33(2) PCT, and should be withdrawn.

In re application of : GRAY et al.
Examiner : KARTIC PADMANABHAN
International Application No. : PCT/US00/19821
International Filing Date : July 19, 2000
Priority date : July 19, 1999

LACK OF INVENTIVE STEP REJECTIONS

In the Written Opinion; claims 1-37 were found to lack inventive step. However, the Written Opinion failed to explain how the claimed invention lacked inventive step in view of Wilker et al (*Angew. Chem. Int. Ed.*, 1999, 38, 90-92).

Applicants respectfully disagree with the rejection. Applicants have cancelled the compositions claims 1-19 in order to expedite prosecution of the present application. Applicant retains the right to pursue claims similar to claims as filed, in further pending applications. The methods of claims 20-37 involve an inventive step since the prior art does not teach methods of detecting target biomolecules as claimed.

Moreover, there is no suggestion by Wilker *et al.* of the claimed methods. The methods taught by Wilker *et al.* are directed to the use of sensitizer-linked substrates to explore reactive redox states in enzyme interiors, which differ from the methods claims 20-37, which are directed to novel methods for detecting and characterizing target biomolecules using the sensitizer-linked substrate molecules. As described in the Specification (page 22, lines 22-26), the characterization of biomolecules includes, but are not limited to, measurement of structural properties of the biomolecule such as the active site size, shape, and volume, aspects of substrate specificity, elucidation of the mechanism of action of the biomolecule, and interactions between biomolecules, i.e. regulation or modulation of the biomolecule, especially by other biomolecules and not limited to the exploration of reactive redox states, as taught by Wilker et al. Thus, the method claims 20-37 do not overlap the method of Wilker et al.

Further, Wilker et al. does not describe or suggest the method of claim 37, which is directed to an assay to identify agents that modulate a target biomolecule activity, using sensitizer-linked substrates. Thus, the method of claim 37 does not overlap the disclosure of Wilker *et al.* Thus, this reference cannot render the invention of claim 37 lacking in inventive step.

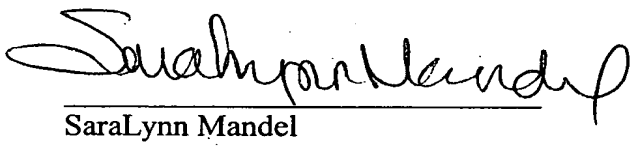
As such, the references cited do not deprive the subject matter of the claims of the present application of inventive step and should be withdrawn.

Conclusion

Applicants submit claims 20-37 satisfy the requirements for novelty and inventive step for the reasons discussed above.

No fee is deemed necessary in connection with the filing of this response. If any fee is necessary, the Patent Office is authorized to charge any additional fee to Deposit Account No. 50-0306.

Respectfully submitted,



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